
Space Weather Forecast

Issued on Saturday, 15 January 2022 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Minor Storm intervals today.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate in the last 24 hours. A moderate class flare was observed around 14/0200 UTC from just over the northeastern limb. There are a number of sunspot regions on the Earth-facing side. These are all generally simple and inactive. No Earth-directed coronal mass ejections (CMEs) have been observed, although a CME did occur early afternoon as a filament lifted-off from the southwest quadrant, and the CME is expected to pass close to Earth late tomorrow or early day 3 (17th). There is a slight chance of some weak CME influence occurring at Earth.

Solar Wind / Geomagnetic Activity: This morning the solar wind speed was at background levels, while the the total magnetic field strength carried by the wind was weak to moderate, and there was no notable strength in the important north-south direction. Geomagnetic activity remained Quiet. This afternoon the total magnetic strength steadily increased, becoming strong, while the important north-south component became strongly southward. Through the evening the solar wind increased to become slightly elevated, around 430 km/s. These changes in the solar wind parameters indicate the imminent arrival of an enhanced solar wind, and resulted in Minor Storm geomagnetic conditions at the end of the day.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low or Moderate, and further Common class or Moderate class flares are anticipated to continue from the new active region appearing across the northeastern limb. Another region is also expected to rotate on from the far side, within the next two days, and this could also increase solar activity.

Solar Wind / Geomagnetic Activity: No Earth-directed CME's are currently expected, although one CME is expected to pass close to Earth late tomorrow or early on day 3 (17th). The solar wind is expected increase through today, once Earth fully connects to a fast wind from a coronal hole feature, becoming strong with speeds 600-650 km/s. The enhanced solar wind is then expected to gradually decline from day 3 (17th) onwards. Minor to Moderate Storm conditions are expected initially, then decreasing Unsettled to Active later today and through tomorrow, but with further Minor Storm intervals likely, especially during the coming UTC night. Geomagnetic activity is expected to decline Quiet to Unsettled for days 3 and 4 (17th and 18th).

Energetic Particles / Solar Radiation: Energetic particles (high energy protons) are forecast to remain at predominantly background levels with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	Yes	100	60	10	1
Strong	G3	No	10	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	40	40	30	30
Very Active	R3 to R5 X	No	5	10	5	3

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)